

fined) or subordinated Indebtedness, make certain other Restricted Payments (as defined), create certain liens, enter into certain transactions with affiliates, sell assets, issue or sell Equity Interests of the Issuers' Restricted Subsidiaries or enter into certain mergers and consolidations. The Indenture also will require the Company to obtain launch vehicle and in-orbit insurance under certain circumstances. See "Description of Notes — Certain Covenants."

**Amendment and Modification of  
the Indenture** .....

Certain provisions of the Indenture, including those related to a Change of Control, may be amended or supplemented with the consent of the Holders of at least a majority in principal amount of the then-outstanding Notes.

**Exchange Offer;**

**Registration Rights** .....

The Issuers and the Guarantors will enter into a registration rights agreement (the "Registration Rights Agreement") with the Initial Purchasers pursuant to which the Issuers and the Guarantors will use their best efforts to file a registration statement (the "Exchange Offer Registration Statement") with respect to an offer to exchange the Notes for a new issue of debt securities of the Issuers (the "Exchange Notes") registered under the Securities Act, with terms substantially identical to those of the Notes (the "Exchange Offer").

**Use of Proceeds** .....

The net proceeds from the sale of the Notes are estimated to be \$164 million after deducting the discounts and commissions and the expenses of the Offering. All the net proceeds will be applied to the design, construction, launch, operation and marketing of the ORBCOMM System, including operating expenses and working capital, the purchase of the Pledged Securities and the deposit into escrow of an amount sufficient to pay when due all remaining interest and principal payments on the MetLife Note. Pending such use, the net proceeds will be invested in short-term, investment-grade securities. See "Use of Proceeds."

For additional information regarding the Notes, see "Description of Notes."

**Risk Factors**

Prospective purchasers of the Notes should carefully consider the risks set forth under "Risk Factors" beginning on page 13, including that the Company is a development stage company, has not generated any material revenue from operations to date and does not expect to generate positive cash flow until after the ORBCOMM System is fully deployed (which is currently planned for late 1997), as well as the other information and data included in this Offering Memorandum prior to making an investment in the Notes.

## Summary Financial Data

The following summary financial data of ORBCOMM have been derived from the financial statements of ORBCOMM contained herein. The financial data of ORBCOMM as of and for the three months ended March 31, 1995 and 1996 are unaudited but have been prepared on the same basis as the audited financial statements and, in the opinion of management, contain all normal recurring adjustments necessary for the fair presentation of the results of operations for such periods. The selected financial data set forth below should be read in conjunction with "Management's Discussion and Analysis of Financial Condition and Results of Operations" and the financial statements of ORBCOMM and notes thereto included elsewhere in this Offering Memorandum. Since the Company accounts for its ownership in both ORBCOMM USA and ORBCOMM International using the equity method, potential investors are also encouraged to refer to the financial statements of ORBCOMM USA and ORBCOMM International located elsewhere in this Offering Memorandum.

	Year Ended December 31,		Three Months Ended March 31,	
	1994	1995	1995	1996
	(In thousands)			
Income and Expense Data:(1)(2)				
Total income	\$ 0	\$ 958(3)	\$ 632(3)	\$ 16
Engineering expenses	0	0	0	934
Administrative expenses	9	50	0	836
Depreciation	0	0	0	1,519
Equity in earnings (losses) of affiliates(4)	0	(853)	0	(607)
Excess (deficiency) of income over expenses	(9)	55	632	(3,879)
Other Data:				
Ratio of earnings to fixed charges(5)	—	—	5.5x	—
Deficiency of earnings to fixed charges	N/A(6)	371	—	3,974
Pro forma deficiency of earnings to fixed charges(7)		25,011		10,123

March 31, 1996	
Actual	As Adjusted(8)
(In thousands)	

### Balance Sheet Data:

Cash and cash equivalents .....	\$ 997	\$ 164,905(9)
Restricted cash .....	0	48,460(10)
Mobile Communications Satellite System, net(11) .....	122,300	122,300
Investments in and advances to affiliates(4) .....	(81)	(81)
Total assets .....	123,827	342,560
Long-term debt .....	3,956	173,956
Partners' capital .....	104,722	153,455

- (1) For the period June 30, 1993 (date of inception) through December 31, 1993, there were no income and expense transactions.
- (2) The Company is a development stage company and had no revenue for the periods presented.
- (3) Comprises interest income and a non-refundable fee received from a potential International Licensee.
- (4) The Company accounts for its investments in ORBCOMM USA and ORBCOMM International using the equity method of accounting.
- (5) For purposes of determining the ratio of earnings to fixed charges, "earnings" includes excess (deficiency) of income over expenses adjusted for fixed charges.
- (6) Ratio of earnings to fixed charges is not applicable as there were no fixed charges during this period.
- (7) Pro forma deficiency of earnings to fixed charges is calculated based upon an interest rate on the Notes of 14% per annum plus the Revenue Participation Interest and the amortization of deferred financing fees.
- (8) As adjusted to reflect the estimated net proceeds from this Offering and the contribution of the balance of the ORBCOMM partners' capital commitments. See "Use of Proceeds" and "Capitalization."
- (9) Includes \$13 million of the net proceeds of the Offering to be deposited by the Issuers into a segregated account and used solely for purposes of funding the development and deployment of the ORBCOMM System and related operating expenses. See "Description of Notes — Certain Covenants — Contingency Fund."
- (10) Represents the aggregate principal amount of the Pledged Securities, estimated at approximately \$44.3 million, and the amount in the segregated account related to the MetLife Note, estimated at approximately \$4.2 million. See "Description of Notes — Security."
- (11) Represents the ORBCOMM System.

## The ORBCOMM System

### Summary Satellite Data

The ORBCOMM System is a global satellite communications system comprising a constellation of LEO satellites, certain terrestrial facilities including Gateways, network control systems and Subscriber Communicators that is intended to provide two-way data and messaging communications services throughout the world. The most significant characteristics of the satellites that comprise the ORBCOMM System, such as their design specifications, coverage and design life, as well as licensing and launch information for the satellites, are summarized in the following table.

	<u>Number of Satellites(1)</u>	<u>Plane</u>	<u>Launch Date</u>	<u>Launch Vehicle</u>	<u>Licensed</u>	<u>Design Life</u>
A. Operational(2)						
1. FM 1-2	2	70°	April 1995	Pegasus*	October 20, 1994(3)	4 Years
B. Licensed						
1. FM 3-4	2	70°	First Quarter 1997(4)	Taurus*(5)	October 20, 1994	5 Years
2. FM 5-12	8	45°	Second Quarter 1997(4)	Pegasus XL	October 20, 1994	5 Years
3. FM 13-20	8	45°	Third Quarter 1997(4)	Pegasus XL	October 20, 1994	5 Years
4. FM 21-28	8	45°	Fourth Quarter 1997(4)	Pegasus XL	October 20, 1994	5 Years
5. FM 29-36(6)	8	45°	Optional	Pegasus XL	October 20, 1994	5 Years

- (1) Each of the satellites that comprise the ORBCOMM System is an Orbital MicroStar™ satellite, weighing approximately 95 pounds and measuring approximately 41 inches in diameter, 6.5 inches in height, 170 inches in deployed length and 88 inches in "deployed width at solar arrays." Each of the ORBCOMM System satellites is currently authorized to operate in the 137.0-138.0 MHz band with a power flux density ("PFD") limit of  $-125 \text{ dB (W/m}^2/4 \text{ kHz)}$  for (satellite-to-subscriber and -Earth station) transmissions. Also, each satellite currently is authorized to operate at 400.1 MHz ( $\pm 25 \text{ kHz}$ ) for satellite-to-subscriber transmissions with no PFD limit. Each of the ORBCOMM System satellites also is currently authorized to operate in the 148.0-149.9 MHz band for uplink (subscriber- and Earth station-to-satellite) transmissions at five watts. OCC has requested that the FCC allocate additional frequency located at 137.0-138.0 MHz and 149.9-150.05 MHz for use by Little LEO systems. See "Business — Regulation — Second Processing Round."
- (2) The two ORBCOMM System satellites that are currently in orbit provide communications availability in the United States for approximately 10% of each 24-hour period (eight to ten passes over a fixed point on the Earth's surface each day), with maximum outages of approximately nine hours. ORBCOMM expects that, with a planned constellation of 28 satellites, the ORBCOMM System will provide communications availability generally exceeding 95% of each 24-hour period in the United States and other temperate zones in the Northern and Southern hemispheres and exceeding 75% of each 24-hour period in the equatorial region.
- (3) The license for the ORBCOMM System issued to OCC by the FCC on October 20, 1994 supersedes the earlier experimental licenses granted to OCC and includes the two satellites launched by OCC in April 1995. The October 20, 1994 license grants OCC the authority to construct, launch and operate 36 LEO satellites in the United States.
- (4) Each of the future launch dates identified represents the currently targeted launch date.
- (5) These two satellites are intended to be launched as a secondary payload on a Taurus launch vehicle, also manufactured by Orbital.
- (6) These eight satellites represent ground spares that may be deployed as a fourth plane by the Company, provided that, subject to FCC approval, the Company may determine not to so deploy such satellites.

## RISK FACTORS

*Prospective investors should carefully consider the following risk factors, in addition to the other information contained elsewhere in this Offering Memorandum, in evaluating whether to purchase the Notes.*

### Development Stage Company

*Expectation of Continued Losses and Accumulated Deficits.* ORBCOMM is a development stage company that commenced commercial service in the United States with its first two satellites on February 1, 1996 and, therefore, has generated only nominal revenues from its limited operations to date. ORBCOMM's activities have focused primarily on acquisition of U.S. regulatory approvals for operation of the ORBCOMM System, design, construction and deployment of its initial satellites and associated network systems, negotiation of reseller agreements, identification of potential International Licensees in countries outside the United States, identification of Subscriber Communicator manufacturers and hiring of management and other key personnel.

The continued development of ORBCOMM's business and deployment of the ORBCOMM System will require significant capital expenditures, a substantial portion of which will need to be incurred prior to the realization of significant revenues from the ORBCOMM System. Together with ORBCOMM's operating expenses, these capital expenditures will result in a negative cash flow until an adequate revenue-generating customer base is established. ORBCOMM has incurred cumulative deficiency of income over expenses of approximately \$3.8 million through March 31, 1996 and it expects such losses to continue for the foreseeable future. See "Management's Discussion and Analysis of Financial Condition and Results of Operations." The Company does not expect that the ORBCOMM System will generate positive cash flow until the ORBCOMM System is fully deployed and operational, which is expected to occur in 1998. There can be no assurance that the Company will achieve its objectives by the targeted dates. See "Business."

*Limited Operating and Financial Data.* Prospective investors have limited operating and financial data about the ORBCOMM System on which to base an evaluation of the ORBCOMM System's performance and an investment in the Notes offered hereby. ORBCOMM's ability to provide commercial service on a worldwide basis and to generate positive operating cash flow will depend on its ability to, among other things: (i) successfully construct and deploy the remaining satellites in the ORBCOMM System in a timely manner; (ii) develop Reseller capabilities within the United States and license arrangements outside the United States sufficient to capture and retain an adequate customer base; and (iii) through its existing or proposed International Licensees, obtain the necessary foreign regulatory authority and construct the necessary ground infrastructure outside the United States. Given ORBCOMM's limited operating history, there can be no assurance that it will be able to overcome these barriers, to develop a sufficiently large revenue-generating customer base to service its indebtedness or to compete successfully in the communications industry.

*Potential Additional Capital Requirements.* The Company currently expects to require approximately \$350 million for capital expenditures, development and operating costs of the ORBCOMM System and the purchase of the Pledged Securities from June 30, 1993 (date of inception) through at least December 31, 1997, when full deployment of the ORBCOMM System is expected to have occurred. Through March 1996, the Company had expended approximately \$124 million for the design, construction, deployment and/or procurement of satellites, launch vehicles, portions of the network control elements and the U.S. ground segment and for market development and regulatory activities. To finance such expenditures, the Company has obtained approximately \$160 million in equity contributions and commitments from its partners and approximately \$5 million from proceeds of the Company's senior secured debt and expects to receive net proceeds of approximately \$164 million from the Offering. See "Use of Proceeds." The Company believes that the net proceeds of the Offering and the remaining capital commitments of the ORBCOMM partners, together with expected cash from operations, will be sufficient to fund the Company's operations through at least December 31, 1997, when full deployment of the ORBCOMM System is planned to have occurred. There can be no assurance that the Company will generate sufficient cash from operations, or that expenses will not exceed the Company's estimates, such that additional capital will not be required. In particular, additional capital would be required in the event that: (i) there are delays in the deployment of the

ORBCOMM System as a result of launch or satellite failure or otherwise; (ii) the Company incurs additional costs in completing the ORBCOMM System including as a result of modifying the design of all or a portion of the ORBCOMM System in the event of any technical difficulties or regulatory requirements; (iii) there is an increase in the Company's estimated net operating deficit indirectly as a result of the Company's incurring significant unanticipated expenses; or (iv) reseller and international licensee agreements for additional markets or territories are not entered into at the times or on the terms anticipated by ORBCOMM. See "Business — Development Milestones." There can be no assurance that additional capital will be available for any of the foregoing purposes from the public or private markets or from ORBCOMM's existing partners on favorable terms or on a timely basis, if at all. A substantial shortfall in funding would delay or prevent completion of the ORBCOMM System. In view of the Company's current stage of development, the risk of any of the aforementioned occurrences is substantial. The Company's ability to achieve positive cash flow will depend on successful and timely design, construction and deployment of the ORBCOMM System, the successful marketing of its services by Resellers and International Licensees, and the ability of the ORBCOMM System to compete successfully against its competitors, as to which there can be no assurance.

### **Substantial Leverage; Restrictive Covenants**

As of March 31, 1996, on a pro forma basis after giving effect to the Offering and the contribution of the partners' remaining capital commitments, the Company's total indebtedness would have been \$174 million and its partners' capital accounts would have totaled \$153.4 million. On a pro forma basis after giving effect to the Offering, the Company's deficiency of earnings before fixed charges to cover fixed charges for the three months ended March 31, 1996 and the year ended December 31, 1995 would have been \$10.1 million and \$25 million, respectively.

The Indenture will contain, and any additional financing agreements may contain, certain restrictive covenants. The restrictions contained in the Indenture will affect, and in some cases will significantly limit or prohibit, among other things, the ability of the Company to incur indebtedness, make prepayments of certain indebtedness, pay dividends, make investments, engage in transactions with affiliates, issue capital stock, create liens, sell assets and engage in mergers and consolidations. If the Company fails to comply with the restrictive covenants in the Indenture, the Company's obligation to repay such obligations may be accelerated.

The successful implementation of the Company's strategy, among other things, is necessary for the Company to be able to meet its debt service. The Company currently has no significant sources of revenue. In addition, the Company's ability to satisfy its obligations once the ORBCOMM System is operational will depend on the Company's future performance, which is subject to a number of factors, many of which are beyond the Company's control. There can be no assurance that the Company can complete the ORBCOMM System or that, once completed, the Company will generate sufficient cash flow from operating activities to meet its debt service and working capital requirements. Any failure or delay in deployment of the ORBCOMM System could have a material adverse effect upon the Company's business, results of operations and financial condition, including failure to meet these debt service requirements.

The Company's high degree of leverage could have important consequences to the Holders of the Notes, including that: (i) a substantial portion of the Company's net cash provided by operations will be committed to the payment of the Company's interest expense and principal repayment obligations and will not be available to the Company for its operations, capital expenditures, acquisitions or other purposes; (ii) the Company's ability to obtain additional financing in the future for working capital, capital expenditures or acquisitions may be limited; (iii) the Company will be highly leveraged, which may place it at a competitive disadvantage and limit the Company's flexibility in reacting to changes in its business; and (iv) the Company's borrowings under any Bank Credit Facility may be at variable rates of interest, which would result in higher interest expense in the event of an increase in interest rates. See "Description of Notes."

### **Launch Risks**

For the ORBCOMM System to be fully deployed and offer real time data and messaging services under the Company's current schedule, ORBCOMM expects to launch 26 satellites during 1997. The Company has

contracted with Orbital to provide three separate Pegasus XL launch vehicles to deploy the satellites eight at a time, and one Taurus launch vehicle to deploy two satellites. Satellite launches are subject to significant risks, including failure of the launch vehicle, which may result in disabling damage to or loss of the satellites, or failure of the satellites to achieve their proper orbit. There can be no assurance that any of the proposed ORBCOMM System satellite launches will be successful. Through June 30, 1996, Orbital has conducted a total of eight standard Pegasus missions, all of which were fully or partially successful. Whether a mission is fully or partially successful depends on the particular mission requirements designated by the customer. Prior to its first two successful flights in March and July 1996, the modified Pegasus XL, an enhanced version of the standard Pegasus, had two unsuccessful flights, one occurring in June 1994 and the other in June 1995. The first Pegasus XL failure was caused by inaccurate aerodynamic modeling of the vehicle. The second Pegasus XL failure resulted from human assembly error involving the improper installation of a small component that prevented the Stage 1/Stage 2 interstage from properly separating from Stage 2. Following a comprehensive review of design, assembly, test and operations procedures, the Pegasus XL returned to flight on March 8, 1996, successfully launching a satellite for the U.S. Air Force to its intended orbit, and had a second successful flight on July 2, 1996, delivering a National Aeronautics and Space Administration ("NASA") satellite to its designated orbit. There are five additional Pegasus XL launches currently planned before the scheduled deployment of the remaining ORBCOMM satellites using this launch vehicle. The failure of any one of these launch vehicles could result in a delay in the deployment of the ORBCOMM System satellites. For the ORBCOMM System to function at maximum design efficiency, each individual plane of satellites comprising the constellation must be deployed into its proper orbit.

Orbital's Pegasus XL vehicle is launched from beneath a modified Lockheed L-1011 aircraft. In 1992, Orbital entered into a ten-year lease for the Lockheed L-1011. In the event the L-1011 is unavailable for any reason, the Company would experience significant timing delays as a result of Orbital having to acquire and modify a new launch vehicle or the Company having to arrange for deployment of the satellites using an alternative launch vehicle or by means of a ground launch. There can be no assurance that another aircraft could be obtained and properly modified or that alternate launch services could be obtained on a timely or cost-effective basis, if at all.

ORBCOMM intends to launch two additional satellites in 1997 as a secondary payload on a Taurus launch vehicle, also manufactured by Orbital. The Taurus launch vehicle, the design and technology of which is derived largely from the Pegasus launch vehicle, had a successful first launch in 1994. Because these two satellites will be launched as a secondary payload, they are subject to the scheduling restrictions imposed by the availability of the primary payload. Accordingly, it may not be possible to launch the two satellites at the time currently planned, if at all.

### **Technological Risks**

*Integration and Operation Risks.* The ORBCOMM System is exposed to the risks inherent in a large-scale complex communications system employing advanced technology. The operation of the ORBCOMM System will require the detailed design and integration of communications technologies and devices ranging from satellites operating in space and Subscriber Communicators to Gateways located around the globe. There can be no assurance that, even if built to specifications, the ORBCOMM System will function as expected in a timely and cost-effective manner. The failure of any of the diverse and dispersed elements to function and coordinate as required could delay the full deployment of the ORBCOMM System or render it unable to perform at the quality and capacity levels required for success.

The ORBCOMM satellites have limited redundancy against technical failure and there can be no assurance of a particular satellite's longevity. A number of factors will affect the useful lives of the ORBCOMM System satellites, including quality of construction, expected gradual environmental degradation of solar panels and durability of component parts. Random failure of satellite components could result in damage to or loss of a satellite. In rare cases, satellites could also be damaged or destroyed by electrostatic storms or collisions with other objects. ORBCOMM's operating results would be adversely affected in the event the useful life of the satellites were significantly shorter than five years.

The Company has experienced and continues to experience, from time to time, certain technical difficulties with its initial two satellites, including outages of certain electronic systems and subsystems resulting in the temporary inability to process subscriber communications. While the Company believes these technical difficulties have been addressed as experienced, and that none of the difficulties has resulted or will result in a significant degradation of satellite performance, there can be no assurance that performance degradation in these two satellites will not occur in the future.

In addition, the Company is modifying the existing satellite design to enhance overall satellite performance. For example, the Company is redesigning the satellite antenna to increase satellite availability to subscribers and to increase satellite capacity. While such design modifications will be subject to extensive design reviews and testing prior to deployment of the satellites, there can be no assurance that the modifications will be successful or that the modified satellites will operate as intended.

*Development of Subscriber Communicators.* The successful operation of the ORBCOMM System depends on the design, construction and commercial availability of Subscriber Communicators designed to support the specific needs of users. See "Business — The ORBCOMM System — System Architecture — Subscriber Segment." To ensure availability of Subscriber Communicators having different functional capabilities in sufficient quantities to meet demand, the Company has entered into a development agreement with Panasonic, which has received authorization from the Company for a basic Subscriber Communicator and is in the process of finalizing manufacturing and sales support agreements with Panasonic. The Company also has executed Subscriber Communicator Manufacturing Agreements with Scientific-Atlanta, Magellan, Torrey Science and Stellar. Realization of the full market potential for the Company's communications services depends upon the availability of Subscriber Communicators at prices attractive to customers. There can be no assurance that the Company's Subscriber Communicator manufacturers will successfully design and manufacture Subscriber Communicators to the Company's specifications or in sufficient quantities to satisfy the expected needs of the ORBCOMM System, or that the price of such Subscriber Communicators will decline so as to make them affordable to the broad customer base intended by the Company.

#### **Schedule Delays**

Delay in the timely construction, deployment and commercial operation of the ORBCOMM System could result from a variety of causes, including delays encountered in the construction, integration and testing of the ORBCOMM System, a delayed or unsuccessful launch, delays caused by design reviews in the event of a launch vehicle failure or a loss of satellites, or as the result of a delay in the FCC's approval of OCC's request for modification of its FCC license filed in October 1995 (the "Modification Request") or other events beyond the control of ORBCOMM. The construction schedule for the satellites in the ORBCOMM System requires a rate for satellite production and testing that is unprecedented for commercial communications systems. The schedule set forth under the Procurement Agreement has been delayed six months as a result of, among other things, enhancements made to the design of the satellites. Although such delay has not affected the current planned launch dates of the ORBCOMM System satellites, the contingency period within the overall schedule for the development and deployment of the ORBCOMM System has been reduced. A significant delay in the deployment of satellites from the Company's current schedule could materially and adversely affect the Company's operations. In addition, a significant delay in the manufacture of Subscriber Communicators could have a material adverse effect on the Company's results of operations. The success of the ORBCOMM System depends on Subscriber Communicators being available to potential subscribers on a timely basis to take advantage of the intermittent data communications services currently available and the real time data and messaging services that will be available on full deployment of the ORBCOMM System. There can be no assurance that the satellites or the Subscriber Communicators will be available on a timely basis.

#### **Regulatory Risks**

*Licensing Risks; Domestic.* ORBCOMM's business may be affected by the regulatory activities of various U.S. government agencies, primarily the FCC. On October 20, 1994, the FCC granted to OCC the FCC License, authorizing OCC to construct, launch and operate the ORBCOMM System for the purpose of

## Market Acceptance

The success of the ORBCOMM System and the Company's ability to pay interest and principal on the Notes will depend on subscriber acceptance of ORBCOMM System services. Subscriber acceptance of ORBCOMM System services will depend on a number of factors, including the technical capabilities of the ORBCOMM System, the cost of Subscriber Communicators, the price of ORBCOMM System services and the extent, availability and price of alternative communications services. There can be no assurance that price, service limitations or Subscriber Communicator size, weight or cost will not result in more significant limitations on customer acceptance than the Company anticipates. The ORBCOMM System will provide a new data transfer and messaging capacity to certain markets where the Company has identified a demand for such types of communications services. The Company expects that introduction of the ORBCOMM System will lead to the development of new applications and services that will use the capacity provided by the ORBCOMM System. As with any new service, however, there can be no assurance that development of such applications will occur.

Realization of the full market potential for the Company's services will depend on the availability of Subscriber Communicators that are reasonably priced and that have certain features attractive to the market. One of the Company's Subscriber Communicator manufacturers, Panasonic, currently has Subscriber Communicators that are commercially available. The Company expects that once its other Subscriber Communicator manufacturers have units that are commercially available and once the overall production volume for Subscriber Communicators begins to increase, the price for Subscriber Communicators will decline substantially. Panasonic and Stellar have informed the Company that, in lots of at least several thousand, the price for their respective Subscriber Communicators will be approximately \$550 per unit. There can be no assurance, however, that the price of such Subscriber Communicators will decline so as to make them affordable to a broad customer base. Also, many Subscriber Communicators are currently being designed to offer particular features the Company believes will be attractive to potential end-users, such as GPS. There can be no assurance, however, that the market will demand the types of features currently offered by or proposed to be offered by these Subscriber Communicators, that the Company's Subscriber Communicator manufacturers will continue to manufacture Subscriber Communicators or that technological or other design developments over the years will not render these Subscriber Communicators obsolete.

The success of the ORBCOMM System depends in part on the ability of the Company to offer its data and messaging communications services at rates attractive to the market. Although the Company believes that its pricing structure will make the ORBCOMM System an affordable and thus attractive option for the provision of such services to the industries and markets it has targeted, the cost to end-users for ORBCOMM System services is largely beyond the control of the Company.

## Reliance on Resellers and International Licensees

In the United States, ORBCOMM intends to rely on Resellers to market and distribute its services to retail customers. The willingness of companies to become Resellers will depend on a variety of factors, including regulatory restrictions, whether potential Resellers perceive the ORBCOMM System services to be compatible with their own and whether the proposed compensation provides an adequate return. ORBCOMM's reseller agreements provide that the Resellers will use all reasonable commercial efforts to market and distribute ORBCOMM System services, but in most cases do not require the Resellers to meet established sales objectives. There can be no assurance that ORBCOMM's Resellers will successfully develop a retail market and distribute ORBCOMM System services.

Outside the United States, the Company will enter into Service License Agreements with International Licensees who will be responsible in their territory for, among other things, procuring and installing the necessary Gateways, obtaining all regulatory approvals to provide services using the ORBCOMM System, and operating and marketing services using the ORBCOMM System. The Company intends to select its International Licensees primarily by evaluating the ability of the International Licensee to distribute and market successfully the Company's services. Key components of such an evaluation include the prospective International Licensee's: (i) reputation in the marketplace; (ii) existing distribution capabilities and



infrastructure; (iii) financial condition and other resources; and (iv) ability to obtain the requisite local regulatory approvals to operate the ORBCOMM System. There can be no assurance that the Company's International Licensees will be successful in obtaining the requisite foreign regulatory approvals or, even if successful, that they will successfully develop a retail market and distribute ORBCOMM System services.

Certain of such Resellers and International Licensees are start-up ventures with limited financial resources, and there can be no assurance that any such entities will be successful in their efforts to market effectively the ORBCOMM System or, in the case of International Licensees, to procure and install the necessary Gateways and obtain the necessary foreign regulatory authority to operate their systems.

## Competition

Competition in the communications industry is intense, fueled by rapid and continuous technological advances and alliances between industry participants seeking to use such advances on an international scale to capture significant market share. Although no present participant is currently providing the same global commercial communications services to be provided by the Company, it is anticipated that the ORBCOMM System will face competition from numerous existing and potential alternative communications products and services provided by various large and small companies, including sophisticated two-way satellite-based data and voice communication services. The Company expects that potential competitors will include other Little LEO satellite systems and may include Big LEO and GEO satellite systems and, in some cases, terrestrial messaging and data systems. If any of the Company's competitors succeed in marketing and deploying systems with services similar to those expected to be offered through the ORBCOMM System substantially earlier than the scheduled full deployment of the ORBCOMM System, the Company's ability to compete in markets served by such competitors may be adversely affected.

Some of the Company's potential competitors have financial, personnel and other resources substantially greater than those of the Company. Many of these competitors are raising capital and may compete with the Company. In addition, a continuing trend toward consolidation and strategic alliances in the communications industry could give rise to significant new competitors, and any foreign competitor may benefit from subsidies from, or other protective measures by, its home country. There can be no assurance that some of these competitors will not provide more efficient or less expensive services.

Satellite-based communications systems are characterized by high up-front costs and relatively low marginal costs of providing service. A number of Big LEO and GEO systems are presently being proposed, and, while the proponents of these systems foresee substantial demand for the services they will provide, the actual level of demand will not become known until such systems are constructed, launched and begin operations. Big LEO and GEO systems are designed primarily to provide two-way voice services that require larger, more complex satellites and require a circuit-oriented connection over their network to transmit even short messages, which significantly increases their per-message cost. If, however, the operators of these systems seek to offer services similar to those offered by the ORBCOMM System, price competition could be intense.

Two other Little LEO systems currently are licensed by the FCC to provide data and messaging communications services. One system currently expects to deploy a two-satellite system to transmit health, research and scientific data on a delayed basis between developing countries and the United States. The second system expects to construct and operate a multiple-satellite constellation that could compete with the ORBCOMM System. This system, which is now owned 80% by GE American Communications Corporation, could have significantly greater resources than the Company. There are currently eight applicants (including OCC) before the FCC in a second processing round for Little LEO systems, the filing period for which closed on November 16, 1994. Should the FCC approve any one of the competing second round applications, such licensee could compete with the Company.

Terrestrial wireless services have certain key advantages over satellite-based systems, particularly in urban or densely populated areas, in terms of signal strength and the ability to penetrate various environments (such as buildings). By contrast, the ORBCOMM System is unable to penetrate buildings and has limited application in densely populated areas currently serviced by terrestrial wireless systems. The ORBCOMM

System is not intended to compete with existing and planned terrestrial data and messaging systems. It is expected, however, that as terrestrial communications services expand to regions currently underserved or not served by wireline or wireless systems, demand for ORBCOMM System services in these regions may be reduced. ORBCOMM may also face competition in the future from companies using new technologies and new satellite systems. A number of these new technologies, even if they are not ultimately successful, could have an adverse effect on ORBCOMM as a result of their marketing efforts. ORBCOMM's business would be adversely affected if competitors begin operations or existing or new communication service providers penetrate ORBCOMM's target markets.

#### **Reliance on Single Supplier; Potential Conflict of Interest**

The Company does not independently have, and does not intend to acquire, except by contracting with other parties, the ability to design, develop, construct or launch the satellites in the ORBCOMM System. ORBCOMM has contracted with Orbital to provide these services under the Procurement Agreement. In the event that Orbital fails to perform its obligations under the Procurement Agreement, the deployment of the ORBCOMM System may be delayed until ORBCOMM is able to locate an alternative provider of necessary services to replace Orbital. In addition, a material adverse impact on Orbital and its business may adversely affect Orbital's ability to perform under the Procurement Agreement. The Company has not identified any alternate provider of the services currently being provided by Orbital, and there can be no assurance that such an alternative service provider would be available or, if available, would be available at a cost or on terms favorable to the Company.

Orbital, through OCC, has a substantial interest in the Company. Accordingly, a conflict of interest may exist between the Company and Orbital under the Procurement Agreement and other related agreements between Orbital and OCC. Pursuant to the ORBCOMM Partnership Agreement, significant amendments to the Procurement Agreement, or other transactions between the Company and Orbital, are subject to the approval of Teleglobe Mobile. There can be no assurance, however, that the potential conflict of interest between the Company and Orbital would not have a material adverse effect on the Company.

#### **Market Estimates**

The Company's description of potential markets for its mobile data and messaging communications service offerings and estimates of the Company's addressable markets that are discussed in this Offering Memorandum under the caption "Business — The ORBCOMM System" represent the Company's estimates as of the date hereof with respect to such markets. Such market descriptions and estimates are based on a number of assumptions, some of which may be incorrect or may not materialize, and unanticipated events may occur that could affect actual business realized for ORBCOMM System services. Consequently, actual markets should be expected to vary from the addressable markets discussed herein, and these variations may be material.

#### **Dependence on Key Management and Qualified Personnel**

The Company's ~~success~~ will depend on the efforts of its management team and its ability to attract and retain qualified management and personnel in the future. The Company has no employment contract with any employee and is subject to the loss of one or more key employees at any time. In addition, the Company must rely on several employees of Orbital who play a key role in the performance of Orbital's obligations under the Procurement Agreement. The Company has no control over the relationship between Orbital and such employees. The Company could be materially and adversely affected by the loss of one or more key employees.

#### **Relationship Between Strategic Partners**

ORBCOMM is a partnership whose two partners, OCC and Teleglobe Mobile, each hold a 50% Participation Percentage in the Company. Under the terms of the ORBCOMM Partnership Agreement, substantially all actions by the Company require the approval of at least a majority-in-interest (*i.e.*, partners

holding a majority of the Participation Percentage in the Company). Therefore, under the current ownership structure, if OCC and Telelobe Mobile do not agree on a course of action for the Company, a deadlock would occur. Generally, there is no mechanism in the ORBCOMM Partnership Agreement or any other agreement for resolving such a deadlock. The result of a deadlock between the strategic partners could have a material adverse effect on the Company.

### **Risks of International Operations**

ORBCOMM expects to derive substantial revenues by providing international communications services. Such operations are subject to certain risks such as changes in domestic and foreign government regulations and communications standards, licensing requirements, tariffs or taxes and other trade barriers, exchange controls, and political and economic instability, including fluctuations in the value of foreign currencies which may make payment in U.S. dollars more expensive for foreign customers.

### **Risk that the Company is Treated as a Publicly Traded Partnership**

In general, a partnership is not a taxable entity for United States federal income tax purposes. Certain partnerships ("publicly traded partnerships"), however, are treated as corporations for federal tax purposes if interests in the partnership are traded on an established securities market or on a secondary market (or a substantial equivalent thereof). Treasury Regulations provide generally that, for this purpose, an "interest in a partnership" includes any financial instrument or contract the value of which is determined in whole or in part by reference to the partnership (including the results of partnership operations). The Regulations make an exception to this rule, however, for any financial instrument or contract that (i) is treated as debt for federal tax purposes and (ii) is not convertible into or exchangeable for an interest in the capital or profits of the partnership and does not provide for a payment of equivalent value. Such an instrument is not treated as an "interest in the partnership" for purposes of these rules. The Company believes that the Notes are properly treated as debt for federal income tax purposes and, although the Notes provide for contingent interest that is based on the gross revenues of the Company, that such Notes do not provide for payments that are equivalent in value to an interest in partnership capital or profits. Therefore, the Company intends to report as a partnership, rather than as a publicly traded partnership taxable as a corporation, for federal income tax purposes. If, however, the Internal Revenue Service successfully took a contrary position, the Company would be treated as a corporation for federal tax purposes, which would reduce the amount of the Company's after-tax income available to meet its obligations under the Notes.

### **Fraudulent Conveyance Considerations — Subsidiary Guarantees**

The obligations of the Company under the Notes are guaranteed, jointly and severally, by the Guarantors, including the Guarantees (the "Subsidiary Guarantees") by ORBCOMM USA and ORBCOMM International (the "Subsidiary Guarantors"). It is possible that creditors of the Subsidiary Guarantors may challenge the Subsidiary Guarantees as a fraudulent conveyance under relevant federal and state statutes, and, under certain circumstances (including a finding that a Subsidiary Guarantor was insolvent at the time its Subsidiary Guarantee was issued), a court could hold that the obligations of a Subsidiary Guarantor under a Subsidiary Guarantee may be voided or are subordinate to other obligations of a Subsidiary Guarantor. In addition, it is possible that the amount for which a Subsidiary Guarantor is liable under a Subsidiary Guarantee may be limited. The measure of insolvency for purposes of the foregoing may vary depending on the law of the jurisdiction that is being applied. Generally, however, a company would be considered insolvent if the sum of its debts is greater than all of its property at a fair valuation or if the present fair saleable value of its assets is less than the amount that will be required to pay its probable liability on its existing debts as they become absolute and mature. The Indenture will provide that the obligations of the Subsidiary Guarantors under the Subsidiary Guarantees will be limited to amounts that will not result in the Subsidiary Guarantees being a fraudulent conveyance under the applicable law. See "Description of Notes — Guarantees."

### **Absence of a Public Market**

The Notes have not been registered under the Securities Act and will be subject to significant restrictions on resale. The Notes will constitute a new class of securities with no established trading market. The Issuers do not intend to list the Notes on any national securities exchange or to seek the admission thereof for trading on any automated dealer quotation system. The Notes are expected to be eligible for trading in the PORTAL market, the National Association of Securities Dealers Inc.'s screen-based automated market for trading of securities eligible for resale under Rule 144A; however, no assurance can be given as to the liquidity of, or trading market for, the Notes. The Issuers have been advised by the Initial Purchasers that following the completion of this Offering, the Initial Purchasers currently intend to make a market in the Notes. However, they are not obligated to do so and any market-making activities with respect to the Notes may be discontinued at any time without notice. Because the Notes are being sold pursuant to an exemption from registration under the Securities Act and applicable state securities laws, they may not be publicly offered, sold or otherwise transferred in any jurisdiction where such registration may be required unless the Notes are registered or are sold in a transaction exempt from registration in such jurisdiction. Pursuant to the Registration Rights Agreement, the Issuers have agreed to file an exchange offer registration statement with the Commission within 30 days after the Closing Date and to use all reasonable efforts to cause such registration statement to become effective on or prior to 150 days from the Closing Date. Upon such registration statement being declared effective, the Notes will be exchanged for notes with terms identical in all material respects to the Notes, except that such exchange notes will be freely transferable. No assurance can be given, however, as to the liquidity of the trading market for the Notes.

## MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

### Overview

In 1990, Orbital formed OCC to develop and operate the first global two-way data and messaging communications system. In March 1992 and May 1993, the FCC awarded OCC experimental licenses to develop and test a limited Little LEO service. These licenses permitted the launch of two satellites, the construction of two Earth stations and the provision of service to up to 1,000 Subscriber Communicators. Following receipt of these experimental licenses, OCC sought a strategic equity partner who could offer both financial and communications experience, and in 1993, formed ORBCOMM with Teleglobe Mobile, an affiliate of Teleglobe. Teleglobe Mobile agreed to acquire 50% of ORBCOMM in a two-stage transaction. Teleglobe subsequently sold 30% of its interest in Teleglobe Mobile to TRI for \$43.9 million. In September 1995, Teleglobe Mobile agreed to invest an additional \$75 million, bringing its total capital commitment to approximately \$85 million. At that time, OCC committed approximately an additional \$10 million to the project, bringing its total investment commitment to approximately \$75 million. As of March 31, 1996, Teleglobe Mobile and OCC have invested or committed to invest an aggregate of approximately \$160 million in the ORBCOMM project.

On October 20, 1994, OCC was granted authority by the FCC to construct, launch and operate 36 satellites for the purpose of providing two-way data and message communications and position determination services.

By April 1995, ORBCOMM successfully launched the initial two satellites, completed construction and testing of various network operating systems, substantially completed the U.S. Gateway and transmitted test messages via prototype Subscriber Communicators. After experiencing initial operating anomalies related to satellite positioning and gateway-to-satellite communications, the satellites are functional and currently are providing commercial intermittent data communications services to the environmental and oil and gas industries in the United States.

### Organizational Structure; Financial Reporting

Simultaneous with the formation of ORBCOMM, OCC and Teleglobe Mobile formed two marketing partnerships, ORBCOMM USA and ORBCOMM International (collectively, the "Marketing Partnerships"), with the exclusive right to market the ORBCOMM System in the United States and internationally, respectively. ORBCOMM is a 98% general partner in each of the Marketing Partnerships, while OCC and Teleglobe Mobile control the remaining 2% of ORBCOMM USA and ORBCOMM International, respectively. OCC retains control over the applicable FCC licenses and the ORBCOMM System, consistent with FCC regulations.

Pursuant to the terms of the Partnership Agreements: (i) OCC and Teleglobe Mobile share equal responsibility for the operational and financial affairs of ORBCOMM; (ii) OCC generally controls the operational and financial affairs of ORBCOMM USA; and (iii) Teleglobe Mobile generally controls the operational and financial affairs of ORBCOMM International. Since OCC and Teleglobe Mobile have effective control over ORBCOMM USA and ORBCOMM International, respectively, ORBCOMM accounts for the Marketing Partnerships using the equity method of accounting. ORBCOMM does not consolidate, and therefore does not report on its financial statements, ORBCOMM USA's and ORBCOMM International's actual assets, liabilities and operating revenues and expenses. Instead, ORBCOMM's pro rata share of the results of the Marketing Partnerships are recorded under the caption "Equity in Earnings (Losses) of Affiliates" in ORBCOMM's financial statements. Correspondingly, ORBCOMM's investment in the Marketing Partnerships is carried at cost, subsequently adjusted for the pro rata share of net income and losses, additional capital contributions and distributions under the caption "Investments in and Advances to Affiliates." Potential investors are also encouraged to refer to the financial statements of both ORBCOMM USA and ORBCOMM International included elsewhere in this Offering Memorandum.

## BUSINESS

The Company is establishing the first commercial LEO satellite-based mobile data and messaging communications system that will be available on a global basis. The ORBCOMM System, planned to be fully deployed in late 1997, is designed to provide reliable, low-cost, two-way global data and messaging communications through a constellation of 28 LEO satellites and a complement of associated ground infrastructure situated around the world. The Company believes that there is significant global demand for its low-cost data and messaging communications services. Major target markets include worldwide mobile asset tracking; remote industrial monitoring and control applications; environmental data collection; and real time person-to-person and machine-to-machine communications, including two-way Internet email communications and recreational and business messaging. The Company anticipates that the ORBCOMM System will be used: (i) as a complement to existing or proposed tower-based services such as paging and other narrowband PCS services, providing geographic coverage in areas these systems are unable to reach; and (ii) to enhance data applications currently being provided through the PSTN and the PSDN. In addition, the Company expects that the introduction of its low-cost, reliable data and messaging communications will lead to the development of new applications and services.

The Company currently offers commercial intermittent data communications services in the United States through its existing network, which consists of two LEO satellites launched in April 1995 and related U.S. ground infrastructure. When fully deployed, the ORBCOMM System is designed to provide data and short, alphanumeric paging-like messaging communications coverage virtually anywhere on the Earth's surface in a reliable and cost-effective manner. In contrast to Big LEO systems, which are designed primarily for voice applications and require satellite communications systems that are estimated to cost in excess of \$2 billion to construct and deploy, the ORBCOMM System, which is a Little LEO system, is focused on data communications and messaging applications and will be constructed and deployed for approximately \$258 million (with additional amounts needed to fund initial operation of the ORBCOMM System and certain debt service obligations). The ORBCOMM System is designed to address the substantial existing and growing demand for communications services worldwide, without the high cost and geographic and technical limitations imposed by other communications systems. The Company believes the diversity and depth of the ORBCOMM System's potential applications result in a significant addressable end-user market. Based on industry data and the Company's marketing analyses regarding the tracking and monitoring markets, the Company believes that the size of the 1996 potential addressable market exceeds 78 million users worldwide, including 32 million users in North America. In addition, the Company believes there is a significantly larger addressable market that includes potential users of other messaging services such as paging and PCS.

In October 1994, a subsidiary of Orbital became the first company to be awarded FCC authority to construct, launch and operate a LEO satellite-based data and messaging communications system in the United States. Today, the ORBCOMM System is the only commercial Little LEO system that is fully licensed for all segments of its system in the United States. Certain portions of the radio spectrum were allocated by the ITU for use by Little LEO satellite systems, such as the ORBCOMM System, on an international basis in 1992. The Company intends to enter into agreements with International Licensees, who will pursue the requisite local regulatory approvals for each foreign country in which the ORBCOMM System will operate and who will pay fees for access to the ORBCOMM System in their territory.

In 1995, in addition to the successful launch of the first two ORBCOMM System satellites, the Company: (i) completed initial development and construction of the ground infrastructure located in the United States and associated network control systems; and (ii) tested prototype Subscriber Communicators. The two ORBCOMM System satellites and four U.S. Earth stations currently are providing data communications services, focused on monitoring applications, to the U.S. environmental and oil and gas industries, with tracking and positioning applications targeted for the near future. As of May 31, 1996, the ORBCOMM System had transmitted in excess of one million messages and successfully completed extensive internal and third-party testing, including a rigorous demonstration program conducted by the DoD as part of its Joint Warrior Interoperability Demonstration '95.

To use the ORBCOMM System, a user creates a text message utilizing a computer or Subscriber Communicator device, which message is sent to the nearest ORBCOMM System satellite and delivered to an ORBCOMM Earth station, which supports communication with the satellites, and then to the Gateway Switching System, which processes the messages. Within the Gateway, the message is processed using a combination of ORBCOMM-developed and commercial email software, and sent on to its ultimate destination. If desired, an acknowledgement message is returned to the sender. The final delivery may be to another Subscriber Communicator or may make use of public/private X.25 data networks, the Internet, or text-to-fax conversion.

The Company intends to distribute its services globally in a cost-effective manner through the use of Resellers in the United States and International Licensees around the world. The Company is in the process of negotiating and signing agreements with Resellers, each of whom will be responsible for marketing to end customers in a specific industry and/or market and generally is expected to develop software applications to facilitate use of ORBCOMM System services by such industry or market segment. To date, 21 reseller agreements have been signed with companies including Arinc, Inc., Boatracs, Inc., Corexco Consulting Services, Inc., Globitrac, Inc., IWL Communications, Inc., QUALCOMM, Incorporated and the Stevens Water Monitoring Division of Leupold & Stevens, Inc. The Company has signed 17 Memoranda of Understanding with potential International Licensees and is in active negotiations with six other potential International Licensees; taken together, these 23 potential International Licensees represent approximately 75 countries around the world. The Company intends to convert its existing Memoranda of Understanding into Service License Agreements during the next three to 18 months. In addition, the Company has signed a Service License Agreement with one International Licensee, ORBCOMM Canada Inc., which is controlled by Teleglobe, and which has been given the exclusive right to market services in Canada using the ORBCOMM System.

ORBCOMM is a limited partnership formed in 1993 to develop, construct, operate and market the ORBCOMM System. The general and limited partnership interests in ORBCOMM are held by each of OCC, a subsidiary of Orbital, and Teleglobe Mobile, a Delaware general partnership whose interests are held by Teleglobe and TRI. OCC and Teleglobe Mobile have invested or committed to invest approximately \$160 million in the ORBCOMM project. As of June 30, 1996, approximately \$130 million of the total equity commitment had been contributed to the Company, with the balance to be contributed prior to the consummation of the Offering. The Company believes that such equity investment, together with the proceeds of the Offering and cash expected to be generated from operations, will be sufficient to fund the ORBCOMM System, including: (i) all capital expenditures necessary to deploy the ORBCOMM System; and (ii) all required working capital until at least December 31, 1997, when full deployment of the ORBCOMM System is planned to have occurred. There can be no assurance, however, that additional capital will not be necessary.

### **Business Strategy**

The principal elements of the Company's business strategy include:

***Real Time, Reliable Worldwide Coverage.*** The fully deployed ORBCOMM System is designed to provide real time global data and messaging communications services in a reliable and cost-effective manner. The ORBCOMM System's worldwide coverage will enable it to provide tracking, monitoring and messaging services, including Internet email capability, to customers that are currently beyond the geographic reach of existing terrestrial wireline or wireless systems. The ORBCOMM System is designed to deliver reliable communications services through the use of acknowledgment and store-and-forward capabilities. ORBCOMM expects that, with a planned constellation of 28 satellites, the ORBCOMM System will provide communications availability generally exceeding 95% of each 24-hour period in the United States and other temperate zones in the Northern and Southern Hemispheres and exceeding 75% of each 24-hour period in the equatorial region.

***First-to-Market.*** The ORBCOMM System began providing commercial intermittent service in February 1996. Prior to commencing commercial operations, the space segment, network and management control systems, U.S. Gateway and prototype Subscriber Communicators were tested extensively to ensure technical

viability. The Company believes that the existence of an in-service, commercially operational system provides substantial "first-to-market" benefits, including: (i) reducing technical risk; (ii) increasing the attractiveness of the ORBCOMM System to potential Resellers, International Licensees and Subscriber Communicator manufacturers; (iii) facilitating and encouraging the development of software by Resellers and other application developers for a variety of market applications because of the ability to test the hardware and software in an actual operating environment; and (iv) developing a customer base before other competing Little LEO systems are fully deployed, which the Company believes will not occur before 2000. There can be no assurance, however, that there will be no delays in the existing schedule associated with the construction or deployment of the ORBCOMM System.

*Global Distribution of Services.* The Company believes the ORBCOMM System can rapidly achieve a global presence in a cost-effective manner by capitalizing on the significant resources of Resellers and International Licensees worldwide. The Company plans to provide services in the United States through Resellers, many of whom have an existing, well-established market presence through their existing customer bases, market-specific brand name recognition and distribution networks. Outside the United States, the Company will enter into Service License Agreements with International Licensees who will be responsible in their territory for, among other things, procuring and installing the necessary Gateways, obtaining all regulatory approvals to provide services using the ORBCOMM System and operating and marketing services using the ORBCOMM System. The Company intends to select its International Licensees primarily by evaluating the ability of the International Licensee to distribute and market successfully the Company's services. Key components of such an evaluation include the prospective International Licensee's: (i) reputation in the marketplace; (ii) existing distribution capabilities and infrastructure; (iii) financial condition and other resources; and (iv) ability to obtain the requisite local regulatory approvals.

*Low-Cost Subscriber Communicators.* The Company is committed to promoting the production of lightweight Subscriber Communicators that have a long battery life and are widely available at prices attractive to a broad customer base. The Company has provided extensive design specifications and technical and engineering support to its various Subscriber Communicator manufacturers. The Company currently has a development agreement with Panasonic, which has received authorization from the Company to manufacture a basic Subscriber Communicator and has units that are now commercially available. The Company is in the process of finalizing manufacturing and sales support agreements with Panasonic and has executed Subscriber Communicator Manufacturing Agreements, which include terms regarding the development, manufacture and sales support for Subscriber Communicators, with Scientific-Atlanta, Magellan, Torrey Science and Stellar. The Company believes that once its other Subscriber Communicator manufacturers have units that are commercially available and once the overall production volume for Subscriber Communicators increases, the price for Subscriber Communicators will decline substantially. Panasonic and Stellar have informed the Company that, in lots of at least several thousand, the price for their respective Subscriber Communicators will be approximately \$550 per unit.

*Expertise of Strategic Partners.* Orbital and Teleglobe, the Company's partners, have invested or committed to invest approximately \$160 million in the ORBCOMM project. The Company has used and will continue to use its partners' expertise and capabilities to enhance the ORBCOMM System, including expertise in the design, construction and deployment of satellites and the operation of international wireline and wireless telecommunication services.

Orbital, a Delaware corporation headquartered in Dulles, Virginia and with offices in five countries is the founder of the ORBCOMM project, and through its subsidiary, OCC, has a 50% Participation Percentage interest in ORBCOMM. Orbital is a space technology and satellite services company, with annual revenues in 1995 of approximately \$364 million, that designs, manufactures, operates and markets a broad range of space products and services, including launch systems, satellites, space sensors and electronics, ground systems and software products, satellite access products and communications and information services. Under the terms of the Procurement Agreement between Orbital and ORBCOMM, Orbital will, among other things, construct 34 satellites (including eight ground spares), launch 26 satellites and, on an optional basis, launch the eight ground spares. The satellites and launch services are provided on a fixed-priced basis, although the Procurement Agreement contains certain performance incentives with respect to the satellites.



Teleglobe, a Canadian corporation with 1995 revenues of approximately C\$1.6 billion, provides international telecommunications services to over 240 countries worldwide through a network of submarine cables and satellite Earth stations. Teleglobe currently has offices in ten countries. Teleglobe is owned approximately 22% by BCE Inc., which is the largest public corporate entity in Canada, and indirectly approximately 20% by Telesystem Ltd., which has an interest in TIW. TIW has paging and cellular interests in several countries around the world, including China, Mexico and India. Teleglobe has substantial experience as an intercontinental provider of telecommunication services and has played and continues to play an important advisory role in the ORBCOMM project generally and in the Company's marketing and distribution strategy in particular.

Teleglobe has formed a partnership, Teleglobe Mobile, with TRI to hold its interest in the ORBCOMM project. TRI operates the largest and one of the fastest-growing cellular networks in Malaysia, with over 800,000 subscribers. TRI also has cellular and paging joint ventures in five countries.

### **Constellation Design and Implementation Strategies**

The ORBCOMM System has been designed to provide for the delivery and receipt of data communications and short, alphanumeric paging-like messages anywhere in the world on a highly efficient and cost-effective basis. The Company believes that multiple aspects of the ORBCOMM System design will result in a low-cost product offering worldwide. The implementation plan for the ORBCOMM System is intended to reduce the risk of cost overruns, system performance shortfalls and system deployment delays. Important components of the ORBCOMM System design and implementation strategies include:

*Low-Cost Satellite System.* The ORBCOMM System will consist of 28 LEO satellites. Each satellite is designed specifically for the transmission of short messages. This design focus eliminates a number of complex and expensive components such as customized spot beams, on-board switching and high-powered amplifiers that are required on larger, more complex satellites designed to carry voice, video and data traffic. The less complex and more compact design of the ORBCOMM System satellites (approximately 95 pounds) reduces the cost and time of production and enables the Company to launch multiple satellites using a single, relatively low-cost launch vehicle. The Company has sought to reduce the risk of cost overruns by entering into the Procurement Agreement, a firm fixed-price contract that covers the purchase of satellites, the provision of launch services and the completion of the satellite control center. The Procurement Agreement provides for the construction of 34 LEO satellites and the launch of 26 LEO satellites for a total cost of approximately \$163 million. See "Relationships Among the ORBCOMM Parties — Procurement Agreement."

*Communications Protocol Specifically Designed for Data and Messaging Communications.* The ORBCOMM System uses a packet-switched communications protocol. This design is well suited to ORBCOMM's goal of economic and efficient delivery of short messages because it maximizes the amount of network capacity available, while minimizing the overhead associated with sending each packet or message, thereby lowering the per-message cost. The Company believes this design will provide ORBCOMM with a substantial cost advantage versus the communications protocols to be used by the proposed Big LEO systems such as Iridium and Globalstar. Unlike the ORBCOMM System, Big LEO systems, which are designed primarily for two-way voice traffic, are required to establish a circuit-oriented connection over their network to transmit even short messages, which significantly increases the per-message transmission cost for short messages.

*Contractual and Other Means to Mitigate Delays and System Failures.* The Company believes that the ORBCOMM System's design will reduce the Company's exposure to cost overruns and delays associated with the production and deployment of the ORBCOMM System due to launch or in-orbit satellite failure. The principal elements that will contribute to this reduced exposure include: (i) integration of existing technologies into the ORBCOMM System; (ii) use of launch vehicles that will provide the Company with flexible launch schedules; (iii) conduct of early development and prototyping; (iv) relatively simple, lightweight design of the satellites, which will enable new satellites to be ordered, constructed and launched in a shorter time frame than conventional LEO and GEO satellites; and (v) procurement of nearly all components of the ORBCOMM System (other than certain communications software) from a single contractor (Orbital) that is responsible for end-to-end satellite performance and integration. The redundant coverage provided by the

ORBCOMM System also reduces the ORBCOMM System's exposure to adverse events, which will enable ORBCOMM to operate the ORBCOMM System with less than the full complement of satellites, if necessary. See "Risk Factors — Technological Risks; — Limited Insurance; — Schedule Delays."

In addition, the Company has adopted risk management policies designed to reduce its exposure to cost overruns and to delays associated with deployment of the ORBCOMM System, including: (i) establishment of fee holdbacks under the Procurement Agreement to the extent that certain milestones identified in the Procurement Agreement are not met by Orbital; and (ii) procurement of satellite ground spares, which is expected to enable the Company to launch more quickly up to eight satellites following an in-orbit or launch failure as soon as a launch vehicle is available.

Although the Company believes it has taken appropriate measures to mitigate the risks associated with delays or cost overruns in connection with deployment of the ORBCOMM System, there can be no assurance that such delays or cost overruns will not occur. See "Risk Factors — Limited Insurance; — Schedule Delays."

*Insurance Strategy.* The Company's insurance strategy implements a risk management plan for the protection of the ORBCOMM System. First, to protect against launch costs that may be incurred as a result of launch vehicle failures, ORBCOMM intends to obtain launch insurance for each launch. This insurance will provide ORBCOMM with the funds necessary to procure a replacement launch vehicle in the event of a launch vehicle failure. Second, ORBCOMM will be obligated to procure in-orbit satellite insurance against a satellite failure after placement of such satellites into commercial service. Third, the Procurement Agreement provides for the construction of eight spare satellites, which represent self-insurance against the loss of up to eight satellites. Therefore, until such time as the Company is required to use its ground spare satellites, ORBCOMM does not intend to obtain insurance to cover the cost of obtaining replacement satellites in the event of a launch vehicle failure or an in-orbit failure prior to placement of such satellites into commercial service. In the event that the Company is required to use its ground spare satellites, ORBCOMM will be obligated under the terms of the Indenture to procure insurance for subsequent missions covering a loss of satellites as a result of a launch vehicle failure or an in-orbit failure prior to placement of such satellites into commercial service. In addition, in the event that: (i) the Company is required to use its ground spare satellites as a result of an in-orbit failure of satellites prior to placement of such satellites into commercial operation; and (ii) there are not sufficient insurance proceeds to cover the cost of a launch vehicle for such ground spare satellites, the partners of the Company have agreed, under certain circumstances, to contribute up to \$15 million of equity or subordinated debt financing to the Company, if needed, to fund the cost of such launch vehicle. The Company does not have in-orbit insurance for the two satellites currently operational and does not intend to procure launch or in-orbit insurance for the two satellites to be launched as a secondary payload on a Taurus launch vehicle.

*Early Demonstration of End-to-End Functionality.* ORBCOMM has made significant progress in the development of the ORBCOMM System and currently offers commercial intermittent service in the United States. After the launch of the first two satellites, ORBCOMM successfully conducted "beta tests" of the entire ORBCOMM System and United States ground network with selected major customers in the second half of 1995, using prototype Subscriber Communicators to demonstrate the ORBCOMM System's two-way global messaging and positioning capabilities. ORBCOMM's operation of the two-satellite system during 1995 provided an opportunity to validate the performance of the end-to-end network. Similarly, ORBCOMM demonstrated its ability to control the satellites and the ground infrastructure, and to process messages using its computer network. As of May 31, 1996, the ORBCOMM System had transmitted in excess of one million messages and had successfully completed extensive internal and third-party testing, including a rigorous demonstration program conducted by the DoD as part of its Joint Warrior Interoperability Demonstration '95.

The Company continues to experience, from time to time, certain technical difficulties with its initial two satellites, including unplanned outages of certain electronic systems and subsystems resulting in the temporary inability to process subscriber communications. While the Company believes these technical difficulties have been addressed as experienced, and that none of these difficulties has resulted in a significant degradation of

satellite performance, there can be no assurance that performance degradation in these two satellites will not occur in the future.

The two ORBCOMM System satellites currently operational have provided the Company with significant information regarding actual satellite performance in a space environment. As a result of analyzing this information, as well as information obtained prior to launch, ORBCOMM, in conjunction with Orbital, has undertaken a redesign of certain system elements of the satellites.

*Use of Advantageous Radio Frequencies.* The ORBCOMM System has been granted FCC approval to use radio frequencies in the 148.0-149.9 MHz band, and the 137.0-138.0 MHz and 400.075-400.125 MHz band for its uplink and downlink feeds, respectively. The VHF frequencies are located just above those used for FM radio broadcasts and just below those used for VHF marine push-to-talk radios. By contrast, all of the Big LEOs are currently planned to be licensed in frequencies above 1 GHz. The Company believes that the use of its allocated frequencies will provide significant advantages for packet messaging and data services compared to the use of frequencies above 1 GHz, including: (i) lower power requirements to achieve acceptable link margins, which enhances battery life and reduces ground and space segment costs due to the use of less complex components; and (ii) better signal penetration, which decreases signal degradation due to atmospheric interference such as rain and blockage by foliage. The Company also believes that the substantial technical and manufacturing base that already exists for a wide variety of communication devices that operate near the frequency ranges used by the ORBCOMM System will facilitate the development of low-cost Subscriber Communicators for the ORBCOMM System.

## Project Milestones

The ORBCOMM System is expected to be fully deployed with a 28 satellite constellation in 1997, although this estimate does not take account of potential delays. The timeline below sets forth ORBCOMM's actual and planned development milestones. See "Risk Factors — Development Stage Company; — Technological Risks; — Schedule Delays; — Reliance on Single Supplier; and — Potential Conflicts of Interest."

ORBCOMM Milestones

Activities	1992	1993	1994	1995	1996	1997	1998	1999
<b>Regulatory Licensing</b>								
Initial FCC License								
Modification								
ITU Spectrum Allocation								
In-Country Int'l Regulatory Approvals(1)								
<b>Satellite Constellation</b>								
Satellite Design — Initial								
Satellite Design — Advanced								
Satellite Production(2)								
Satellite Launch:								
Initial Two								
Full Constellation(3)								
<b>Ground Segment</b>								
U.S. Gateway Installation(4)								
Int'l Gateway Installation								
<b>Control Segment</b>								
Network Management System(5)								
Space Vehicle Management System(5)								
<b>Distribution Agreements</b>								
Resellers								
International Licensees								
<b>Subscriber Communicators</b>								
Prototypes(6)								
Production								
<b>ORBCOMM Commercial Service</b>								
Intermittent Service								
Real Time Coverage								

- (1) Obtaining the requisite foreign regulatory approvals will primarily be the responsibility of the International Licensee in each country.
- (2) Represents production of 26 additional satellites and eight ground spares pursuant to the Procurement Agreement.
- (3) Full constellation consists of 28 satellites. An additional eight ground spare satellites may be deployed as a fourth plane, provided that, subject to FCC approval, the Company may determine not to so deploy such satellites.
- (4) Represents installation of at least one operational radome at each U.S. Earth station.
- (5) Enhanced systems are expected to be completed during the first quarter of 1997.
- (6) Assumes ongoing development efforts to access new market applications.

## The ORBCOMM System

### Services

ORBCOMM System service offerings for mobile data and messaging communications will fall into two broad categories with variations based on market requirements: tracking and monitoring; and message and high-priority communications.

**Tracking and Monitoring.** The Company believes that tracking and monitoring users will include a broad group of industries that require a means of regularly collecting data from, or in some cases controlling

equipment in, multiple remote locations. Major target markets include: (i) worldwide mobile asset tracking; (ii) industrial monitoring and control applications; and (iii) environmental data collection. Many of these users manage numerous, widely dispersed sites in remote areas out of reach of the PSTN or terrestrial-based wireless systems, and often accomplish data collection and equipment control functions manually with on-site personnel. These methods can be expensive, inaccurate or difficult to perform. The Company believes that significant demand exists for a low-cost means of remotely performing these tasks.

*Message and Priority Communications.* The Company believes that message communications users will include a broad range of commercial and consumer users who require a means of communicating with locations such as their office, dispatch center or home or who require the ability to send priority messages or positioning information. Examples include professionals who work away from their office, fleet operators who require reliable messaging between a central office and mobile assets, and individuals who desire a means of communicating short messages or positioning information from an automobile, boat or other remote locations. These users currently rely on pagers, cellular phones, fleet dispatch systems and public pay phones, all of which can be unavailable, inconvenient or expensive in certain geographic locations. In remote geographic regions outside the United States, these PSTN and terrestrial-based wireless systems are not always available or cost-effective. As a satellite-based system with coverage available virtually anywhere on the Earth's surface, the Company can offer messaging services through the ORBCOMM System.

#### *Current Addressable Markets*

Based on industry data and the Company's marketing analyses regarding the tracking and monitoring markets, the Company believes that the size of the 1996 potential addressable market exceeds 78 million users worldwide, including 32 million users in North America. In addition, the Company believes there is a significantly larger addressable market that includes potential users of messaging services such as paging and PCS internationally and that the ORBCOMM System can offer services in developing countries or remote regions where basic telephone service or data and messaging services are not available.

The Company has identified a number of industries and industry segments in the United States where there currently exists a demand for mobile data and messaging communications services for tracking and monitoring, which the Company views as the initial primary target applications for its services. These existing tracking and monitoring applications include: (i) tracking and monitoring of transportation assets and cargo; (ii) monitoring of assets in the energy industry; (iii) environmental monitoring; and (iv) certain governmental applications. The Company believes that certain portions of these industries or industry segments possess characteristics or requirements that are particularly well-suited to the services offered by Little LEO systems. The Company refers to these portions as "addressable markets." The Company's description of potential markets for its data and messaging communications service offerings and estimates of the Company's addressable markets represent only the Company's estimates as of the date hereof with respect to such markets. See "Risk Factors — Market Estimates."

*Transportation Assets and Cargo.* Transportation companies require a cost-effective means of regularly and reliably monitoring the location and the status of cargo globally to reduce cargo losses, improve service, and better use transportation assets. Small ORBCOMM Subscriber Communicators could be installed on trailers and programmed to monitor and transmit, on command or at regular intervals, information regarding trailer status and location, and could be specially designated for priority reporting and response. The transportation assets and cargo market can be separated into four transportation categories: trailers; long-haul trucking; containers; and rail cars.

Based on industry data such as published in *The Outlook for Truck Trailers* and *1994 Private Fleet Directory*, the Company believes the overall trailer segment, which includes full truckload, less-than-full truckload and private trucking, aggregates approximately 2.3 million trailers. The Company believes that the addressable market for full truckloads comprises non-refrigerated trailers belonging to large trucking fleets that need to improve trailer utilization. The addressable market for less-than-full truckload comprises non-refrigerated trailers that carry high-value goods and travel longer, less-than-full truckload routes (greater than 400 miles) between regional centers. The addressable market for private fleet trucks are those used in "just-in-

time" manufacturing and distribution systems and which, therefore, typically require high levels of efficiency due to competition from for-hire companies. The Company expects the addressable market for refrigerated trailers to comprise those trailers for which cargo monitoring and trailer utilization are required. Trailers (both refrigerated and non-refrigerated) are currently being tracked by geostationary satellite-based systems (such as those offered by QUALCOMM and AMSC) that offer seamless coverage, but depend on larger power sources that require the trailer to be attached to the main engine of the tractor. As a result, when the trailer is detached from the tractor, it can no longer be tracked. A low-power cellular system (such as the system offered by Highwaymaster) can be used to track untethered trailers; however, the geographic coverage is limited and the Company believes that the cost of cellular roaming may make this service cost-prohibitive. Private trucking fleets typically use systems internal to their companies where each trailer's number is manually recorded as trailers enter and leave a point of distribution.

Based on industry data published in 1994 *Private Fleet Directory*, *Fleet Owner Magazine* and *Report: Structure of the U.S. Trucking Industry*, the Company believes that the U.S. long-haul trucking industry comprises approximately 435,000 trucks. The Company's addressable market is characterized by smaller fleets (typically less than 50 trucks) that need mobile communications to compete with larger fleets but have been unable to afford the current service offerings where equipment costs are approximately \$4,000 per unit. A low-cost alternative for these smaller fleets has been paging; however, paging currently offers only a one-way short data link to the vehicle. The Company believes that the addressable market for the owner-operated transportation vehicle sub-segment comprises those vehicles contracted to larger, long-haul carriers. While these larger carriers resist installing \$4,000 mobile communications units on vehicles they do not own, many are still requiring owner-operators to equip their vehicles with mobile communications.

Based on data contained in *Intermodal Marine Container Report*, the Company estimates the industry segment representing containers (intermodal) that are either refrigerated or designed to hold high-value, non-perishable cargo comprises approximately 1.9 million containers. The Company expects that its addressable market in this industry segment will comprise those containers carrying the most valuable items subject to theft (e.g. electronics and cigarettes). Currently, intermodal container transportation systems use manual systems to record containers as they enter and leave yards. Unlike the ORBCOMM System, these passive systems record where a trailer has been, but not where it is, its status or the condition of its contents.

Based on published data from *Outlook for Freight Cars*, the Company estimates there are approximately 150,000 rail cars in the United States. The Company believes that the addressable market for rail transportation comprises those rail cars used to transport high-value cargo (e.g., automobiles, refrigerated goods and paper rolls) or hazardous cargo comprising bulk materials. The American Association of Railroads has mandated the use of automatic equipment identifiers ("AEI") on rail cars. AEI systems consist of a radio tag mounted on the rail car and a reader that records the identity of the car as it passes by. AEIs therefore share the same limitations as bar code systems because they only record where the trailer has been, not its current location, status or the condition of its contents.

**Energy.** The Company believes that the ORBCOMM System can provide an effective means of monitoring various assets used in the energy industry. According to recent statistical abstracts of the United States, there are over 170,000 miles of oil pipelines and 250,000 miles of natural gas pipelines in the United States, much of which is located in remote areas inaccessible to existing communication networks. Pipeline operators take active measures to monitor lines and limit pipeline corrosion to comply with laws by installing cathodic protection systems that include a device called a rectifier. Protection systems also are required by federal regulations on storage tanks, utility systems and injection wells. The majority of protection system records are now compiled from data collected by personnel who travel to the site and record the readings. Conventional industry practice is to install one rectifier per mile of pipeline with generally one transceiver (subscriber communication device) per rectifier. However, several pipelines can be laid along one right-of-way, with a common rectifier system, meaning that multiple rectifiers can feed into one transceiver unit. The Company believes that the addressable market comprises the aggregate number of rectifiers currently deployed on U.S. pipelines.

The Company expects that another LEO satellite system can support the collection of data from remote sites, with service and equipment costs comparable to those of the ORBCOMM System; however, this system only supports one-way service. Terrestrial wireless systems offer similar services at comparable service costs to the ORBCOMM System, but geographic coverage is limited. For very remote and hard-to-read meters, manual systems are typically used, but they require that personnel travel to the site to read the meter on the transceiver. The Company believes that pipeline operators would benefit significantly from the ORBCOMM System. Subscriber Communicators powered by batteries, solar cells or power sources already installed along the pipeline, could be programmed to transmit required data at regular intervals to allow for monitoring the status of pipelines in remote locations. In addition to recording data, Subscriber Communicators could be commanded to shut pipeline valves in the event of a leak or other emergency.

According to recent statistical abstracts of the United States, there are approximately 853,000 wells producing natural gas and crude oil, and approximately 164 million gas and electric utility meters in the United States. The Company believes that its addressable market will be those production wells and utility meters located in remote geographic locations. Private radio systems based on VHF radio frequency, multiple-address radio and microwave are being used to collect data in moderately remote areas. These systems have been installed primarily for other communications purposes and so the incremental cost of monitoring wells is low. However, private radio systems are not cost-effective in locations where monitoring cannot be combined with other communications functions.

*Environmental Monitoring.* Many industrial companies and government agencies have a need to monitor meteorological, hydrological and environmental data such as rainfall, water levels and water quality at remote sites. The U.S. Environmental Protection Agency ("EPA") is responsible for establishing and monitoring national air quality standards, water quality activities, solid and hazardous waste disposal and control of toxic substances. The EPA has established standards for air and water quality that require pollution abatement procedures, which procedures rely heavily on the automated logging and collection of data from remote sites. The Company believes that there are approximately 250,000 sites in the U.S. that require water quality monitoring devices to measure bacteria, dissolved oxygen, phosphorus, lead and cadmium. In addition to pollutants, water monitoring devices are used to measure flow rate, temperature and water level. The Company believes there are approximately 125,000 sites dedicated to the collection of data on air pollution, concentrations of carbon monoxide, ozone and sulfur dioxide, as well as meteorological data on wind speed and barometric pressure. The Company believes that the addressable market comprises those sites that are located in highly remote areas not served by terrestrial systems, which can use Subscriber Communicators to transmit small amounts of data relatively infrequently and on an exception basis.

The retrieval of data from remote environmental monitoring sites is presently conducted using three methods: site visits; PSTN service; or terrestrial wireless systems such as cellular telephone and specialized mobile radio. The Company believes that ORBCOMM offers an attractive alternative to the existing methods. Site visits are costly, time consuming and result in significant data latency. Terrestrial wireless systems are limited in coverage, particularly in remote areas where much of the environmental monitoring takes place.

*Marine.* The Company has identified two marine industry segments, Fisheries and Barges and Workboats, for which the total market is estimated at 246,000 vessels. *Fisheries Product News* and the National Fisheries Service count 200,000 fishing vessels in the U.S. commercial fleet. The Company's addressable market is expected to be those fishing vessels that operate primarily in the Gulf of Alaska, the Northwest United States and the Northwestern Atlantic. These vessels usually remain at sea for extended periods and operate on extremely tight margins with operating costs that are carefully controlled. As a result, they need low-cost communications systems to meet safety and regulatory requirements and to exchange commercial and operational information with their offices, fuel providers, provisioners and packing houses.

The American Waterways Council estimates that there are 46,000 barges and workboats that operate in U.S. rivers and on coastal waters. The Company expects that its addressable market will comprise barges that operate without independent sources of power and carry grain, coal and other commodities. They traverse U.S. waterways in groups of barges that are "fleeted" together and pushed by towboats and require energy-efficient monitoring and communications devices to transmit position reports, cargo status reports and security

information. Tugs, towboats and supply/service boats also need low-cost two-way communications to send operational and service-related data to their land-based headquarters and receive dispatch instructions in return.

For long-haul communications, commercial fishing vessels use either HF radio or one of the Inmarsat services. HF radio is considered unreliable, not cost-effective and difficult to use, while Inmarsat requires a considerable upfront investment of capital. The Company expects that some commercial fishing vessels may acquire service from AMSC. Currently, there is no technology that provides for the tracking of barges. Since barges have no independent power source, only a system that is both ubiquitous and energy efficient is feasible. Most barge tracking is presently conducted using paper records that are usually several days old. Workboats frequently use cellular telephones, particularly in the Gulf of Mexico. Given the high cost of cellular roaming and the potential for unauthorized use, the ORBCOMM System may provide a more efficient, cost-effective tracking service.

*U.S. Government Applications.* The Company believes U.S. Government applications represent a major target market for its services. Pressures to contain Federal spending and specific acts of Congress have resulted in a major change in the procurement practices in the DoD and civil agencies, causing them, where possible, to purchase satellite-based services from commercial providers. The Company believes that use of LEO systems like the ORBCOMM System will provide Government users with low-cost solutions, low probability of intercept and detection, and worldwide availability. The Company expects to compete to provide LEO service to the U.S. Government, including in connection with certain programs already announced by the U.S. Government.

The DoD is developing the Global Transportation Network ("GTN") to track personnel, aircraft and weapon systems anywhere in the world. Effective military logistics requires location identification and the ability to communicate tasking instructions. Control is required at all locations from rear depots to front-line combat elements, with integrated communications providing the essential link. The GTN is a \$230 million program with an annual operating budget of \$45 to \$50 million. GTN is being developed because no global system currently exists to satisfy the requirements for monitoring status. Lacking a technology that provides cost-effective tracking and monitoring on a global basis, the U.S. military has been relying on manual record keeping, which has recently been supplemented by distributed database systems communicating over DoD-owned and/or leased lines. Asset tracking is currently performed at the endpoints of the distribution chain. For this reason, a misdirected shipment can only be relocated by tracing forward from its most recent known location, and this can take weeks to accomplish. The Company believes the ORBCOMM System will provide data on demand or on a scheduled basis for use by the government.

The Defense Messaging System ("DMS") is a \$1.5 billion project with an annual operating budget of \$45 million to provide messaging for the DoD, NATO and certain civilian agencies. The Company believes that Little LEO systems would complement existing and planned terrestrial wireless and wireline services by providing service in geographic locations where such services are not available or are not cost-effective. Today, numerous independent email systems provide messaging throughout the military, with Autodin currently processing 35 million messages per month. Autodin messages are sent between fixed terminals in locations throughout the world. The Company believes that in the DMS implementation, the ORBCOMM System could offer users the ability to send and receive messages regardless of their physical location.

The Company believes that there are additional DoD programs that may use the services of Little LEO systems including the Global Command and Control System, budgeted for \$500 million; the Air Mobility Command and Control Information Processing System, budgeted for \$210 million; the Combat Search and Rescue program to locate downed pilots, budgeted for \$220 million; the Mobile Satellite Service program, budgeted for \$87 million; the Joint Surveillance System budgeted for \$85 million; and the Commercial Satellite Communications Initiative, budgeted for \$1.6 billion.

There are also a number of civil government applications suitable for Little LEO systems. The Post-FTS 2000 is a program to provide long distance domestic and international wireless Internet access, data and email to U.S. government civilian agencies. It is a ten-year contract providing an estimated \$300 to \$400 million in revenues to service providers. The U.S. Departments of State, Justice and Transportation are also developing



wireless email and messaging programs. The existing FTS2000 provides domestic long distance calling service to the federal government only. The new contract for service includes wireless, mobile and international services.

The Company believes that these new programs have requirements currently unfulfilled by existing systems. Each program promotes the vision of extending communications down to individual soldiers and system operators. Currently, there is no dedicated DoD system available using inexpensive, small, lightweight user terminals. The Company believes that Little LEO systems like the ORBCOMM System can provide such service on a global basis.

*Foreign Government Applications.* Use of Little LEO systems such as the ORBCOMM System is expected to provide foreign governments with low-cost applications, low probability of intercept and detection and worldwide availability. Potential defense applications include transmission of GPS-determined position data for maneuvering units and downed pilots and transmission of air defense, fire support data, asset tracking and tactical messaging. Potential civil government applications include wide-area clandestine communications, monitoring and control of natural resources and search and rescue functions. For foreign governments, the Company anticipates that the ORBCOMM System could improve coverage and reliability and reduce the cost of such applications.

#### *Future Applications*

In addition to the markets and applications (such as those described above) that have already displayed a demand for mobile data and messaging communications services, the Company believes that with the full deployment of the constellation, the ORBCOMM System's combination of capabilities will stimulate new demand, especially among potential messaging users. The explosive growth of communication services is being fueled in part by the need for both consumer and business users to improve their productivity by being in constant contact with information sources. The growth is particularly evident in the wireless segment of the industry. Terrestrial cellular systems only began operation in the United States in 1982 and by the end of 1995 there were more than 33 million subscribers in the United States. According to Malarkey-Taylor Associates, Inc./Economic and Management Consultants International, Inc., there will be approximately 334 million cellular/PCS subscribers globally by 2001. The paging industry, which began in the 1950s, also continues to grow at least 20% per annum and currently there are more than 34 million one-way paging subscribers in the United States alone. Additionally, the Internet is growing at 20% per month and there are expected to be over 300 million Internet users by 2000. This need is also being fueled by an increasingly mobile society that desires to be reachable anywhere, anytime and the growth of a global marketplace.

The Company expects that in the United States, the ORBCOMM System will complement existing and planned terrestrial wireless communications systems, by providing coverage in geographic areas where such services are not offered or by enhancing data applications currently being provided through the PSTN or the PSDN. Internationally, the Company believes that the ORBCOMM System can offer services in developing countries or remote regions where basic telephone service or data and messaging services are not available. As a satellite-based system with coverage of virtually all of the Earth's surface, the Company can efficiently and cost-effectively offer communications services in these geographic areas through the ORBCOMM System.

The ORBCOMM System's combination of low-cost Subscriber Communicators and seamless coverage is expected to provide a range of new personally portable services and gap-filler capabilities such as: (i) stand-alone messaging; and (ii) hybrid messaging.

*Stand-Alone Messaging.* In certain communications applications, the major requirements are low-cost handsets and ubiquitous coverage. The handsets must also be easy to use, provide long battery life, and be readily carried in a purse, briefcase or suit pocket. Typically, use will be infrequent and the length of the message short. Potential user requirements include: (i) persons who want the standby ability to notify someone at the office or at home; and (ii) pleasure boaters, other recreational users, and motorists who may find the system useful for priority communications and for convenience.